Assignment: Electron Dot Diagrams & Ionic Compounds Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Draw the electron dot diagram of the following atoms and their respective ions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| barium | barium ion |  | iodine | iodine ion |
| cesium | cesium ion |  | phosphorus | phosphorus ion |
| gallium | gallium ion |  | selenium | selenium ion |

1. Complete the following table.

|  |  |
| --- | --- |
| **Empirical Formula** | **IUPAC Name** |
| K3PO4 |  |
|  | calcium sulphide |
| Cu2O |  |
|  | nickel (III) nitrate |
| Cr2(SO4)3 |  |
|  | magnesium nitride |
| AlCl3 |  |
|  | iron (II) hydroxide |
| Zn3P2 |  |
|  | lithium bromide |

1. Write the empirical formula or the chemical name and draw the electron dot diagram for the following ionic compounds.

|  |  |  |
| --- | --- | --- |
| potassium oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | RbBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | beryllium phosphide\_\_\_\_\_\_\_\_\_\_\_\_ |
| Na3N\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | strontium bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | AlI3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

*Use the following information to answer the next question.*

Magnesium chloride is a typical ionic compound. It is used in the Dow process for the production of metallic magnesium as shown below.

MgCl2(l) → Mg(l) + Cl2(g)

1. The bonding of MgCl2 can be explained on the basis of electrostatic attraction between ions of
2. Mg2+ and Cl-
3. Mg2+ and Cl2-
4. Mg+ and Cl-
5. Mg+ and Cl2-
6. Magnesium fluoride is an ionic compound used to make lenses and windows for special applications involving ultraviolet light. Ordinary glass does not transmit UV light well, but magnesium fluoride does. What is the ratio of magnesium ions to fluoride ions in magnesium fluoride?
   1. 1 : 1
   2. 2 : 1
   3. 1 : 2
   4. 1 : 3

*Use the following information to answer the next question.*

The formation of an ionic compound is shown below.

a , b → a2+, b- → [a]2+ 2[ b ]- or ab2

(atoms)  (ions) (ionic compound)

1. Which of the following could represent elements a and b?
   1. a = sulphur, b = sodium
   2. a = lithium, b = selenium
   3. a = iodine, b = cadmium
   4. a = barium, b = chlorine
2. Element X has two valence electrons and element Y has 7 valence electrons. Which of the following compounds would you expect to form?
   1. XY2
   2. X2Y
   3. X7Y2
   4. X2Y7

Numerical Response #1

Shown below are the electron dot diagrams for certain atoms. Each atom is capable of forming an ionic bond with another ion.

Al Mg O N

1 2 3 4

The atom that will

lose 2 electrons is \_\_\_\_\_\_\_\_\_\_\_

lose 3 electrons is \_\_\_\_\_\_\_\_\_\_\_

gain 2 electrons is \_\_\_\_\_\_\_\_\_\_\_

gain 3 electrons is \_\_\_\_\_\_\_\_\_\_\_

Numerical Response #2

Shown below are the electron dot diagrams for certain atoms.

Al Br O N

1 2 3 4

The atom that has

2 bonding electrons is \_\_\_\_\_\_\_\_\_\_\_

2 lone pair electrons is \_\_\_\_\_\_\_\_\_\_\_

3 bonding electrons is \_\_\_\_\_\_\_\_\_\_\_

3 lone pair electrons is \_\_\_\_\_\_\_\_\_\_\_

***(There is more than one correct answer).***